

OSTEOPOROSIS AFTER STROKE – WHAT DO WE KNOW?

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Osteoporosis is a disease of decreased bone mass, associated with significant complications, including hip fractures and mortality. It is a well-recognized complication post stroke and has a distinct pathophysiology and clinical presentation that predisposes them to a higher risk than in the non-stroke population. However, diagnostic approach and therapeutic strategies for osteoporosis after stroke have been rarely discussed or defined in the current guidelines.

AIM

To review epidemiology, pathophysiology, and therapeutic strategies for osteoporosis after stroke.

MATERIAL-METHOD

Research in Pubmed database and selection according to relevance and suitability of articles in English, published in the last 12 years, using the MeSH terms for “stroke” and “osteoporosis”.

CONCLUSIONS

Epidemiology

Stroke is a leading cause of adult disability, and up to two-thirds of stroke survivors have limitations in mobility. Previous studies have suggested an up to 4- to 7-fold increase in the risk of fractures in those with stroke compared to healthy controls. The high risk of post-stroke fractures seems to be related with a decline in bone mineral density and with the high risk of falls in these patients.

Pathophysiology

The pathogenesis of osteoporosis after stroke remains unclear. Considerable evidence suggests that loss of body mass index (BMI) preferentially occurs in paretic limbs, even when controlling for disuse. Several studies compared the difference in BMD between affected and non-affected limbs in patients after stroke and healthy individuals and found that upper limbs are disproportionately affected compared to the usual osteoporosis pattern for individuals without stroke. Of many determinants of bone loss post stroke, as advanced age, severity of hemiplegia, longer duration of immobility, lower vitamin D serum levels and time since menopause in women, reduced mobility and length of immobilization appear to be the most significant risk factors.

Therapeutic strategies

Several studies suggest screening for osteoporosis in patients with stroke. There are few clinical trials evaluating drug treatment for post-stroke osteoporosis. Based on the existing evidence, intravenous bisphosphonate would be an effective pharmacological option in these patients. Adequate calcium and vitamin D supplements are essential for stroke patients, especially when other anti-osteoporosis medications, such as bisphosphonates, are given. Supplementation with vitamin K, as well as high intensity weight training may also improve BMD.

Patients after stroke have a high risk of fracture, not only because of low BMD, but because of mobility limitations, poor coordination, cognitive and visual impairments. Our medical intervention should be about potentially modifiable factors, such as osteoporosis, to prevent these fragility fractures from occurring and to give these patients a better quality of life. Further studies are needed to better understand osteoporosis after stroke. Important questions about pathophysiology, screening, and treatment for osteoporosis after stroke remain to be answered.